

**METHOD AND SYSTEM FOR MANAGING
TELECOMMUNICATIONS REPORTS**

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FIELD OF THE INVENTION

[0002] The present invention relates to methods and systems for managing telecommunications reports, and in particular, methods and systems for managing reports based on customer information.

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BACKGROUND

[0003] Telecommunications companies must collect and store a large number of documents. Employees of a telecommunications company may need to access these documents periodically. For example, a telecommunications company regularly receives requests from its customers (both inter-exchange carriers and end users) to access its switches and trunks. The telecommunications company may be required by the public service commission to maintain a copy of these access service requests ("ASRs"). Other documents, such as detailed trunk records ("DTRs"), are internal documents used by telecommunications companies to provision trunks. DTRs comprise data relating to trunk options and to trunk provisioning.

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[0004] These documents (e.g., ASRs and DTRs) are regularly entered and temporarily stored on mainframe database systems. For example, customers typically request service over the telephone and an operator enters the relevant information into the mainframe database system. The information entered by the operator is

5 assembled into a report on the mainframe database system. Cover sheets for the reports, which contain summary information from the reports, are regularly printed (e.g., every morning). A person employed by the telecommunications company retrieves the report cover sheets from the printer, logs in to the mainframe database system each morning, and prints certain full reports to a paper printer based on the
10 cover sheets. The person may, for instance, only print reports for service requests entered that same day. The person manually distributes the documents to the people that need them to do the work (e.g., provide the requested network access to the customers). The person also collects the printed documents, separates the printed documents, and files the documents in a file cabinet.

15 [0005] The company may be required by law or by good business-practice to maintain copies of the documents for a specified period of time. Further, technicians may need to access these documents at a later date. For example, ASRs provide important records of how customers ordered services. A technician wanting to access a particular ASR must locate the ASR in a file cabinet storage area and manually
20 retrieve it.

[0006] It would be desirable to have a system and method that automated these

tasks and provided for the electronic collection and storage of telecommunications documents. It would also be desirable for technicians to be able to access these documents using personal computers rather than accessing the mainframe database system or searching hard copies in a file cabinet.

SUMMARY OF THE INVENTION

5 [0007] The present invention relates to methods and systems for managing telecommunications reports. As used herein, "telecommunications reports" include, but are not limited to, access service requests, detailed trunk records, and other reports based on customer information (e.g., customer requests or customer submissions).

10 [0008] In one embodiment, a method for managing customer service request reports comprises receiving customer data in a mainframe database system based on a plurality of customer requests, generating a report for each of the plurality of customer requests based on the customer data in the mainframe database system, printing summaries of the reports to a printer emulator, importing selected data from the report summaries into a spreadsheet; and delivering the spreadsheet to at least one terminal. Customer data may comprise, for example, customer names, locations, and service request dates. Selected data may comprise, for example, report numbers and service request dates.

15 [0009] In another embodiment, a method of the present invention may further comprise selecting at least one report based on the selected data in the spreadsheet. The spreadsheet will place an indicator (e.g., "Y") in a column of the spreadsheet to

indicate that the report has been selected for printing by default. An operator may
deselect items if desired. If the date matches the current date and the indicator is "Y",
then the reports are printed. The selected reports may be printed at a specified time
(e.g., when requested by an operator, when requested by a computer, or at regular
5 intervals).

[0010] After the spreadsheet is delivered to a terminal, a terminal operator may
view the spreadsheet and select reports based on the data in the spreadsheet. The
reports may be selected by the operator for subsequent printing. The spreadsheet may
include a column indicating whether the report was automatically selected by the
10 spreadsheet (e.g., reports are automatically selected if the service request date is the
current date). When the spreadsheet is delivered to a terminal, an operator may
change the automatic designation of the report (e.g., select an unselected report or
deselect a selected report).

[0011] In another embodiment, a method of the present invention comprises
15 receiving customer data in a mainframe database system based on a plurality of
customer requests, generating a report for each of the plurality of customer requests
based on the customer data in the mainframe database system, printing summaries of
the reports to a printer emulator, importing selected data from the report summaries
into spreadsheet, selecting reports based on the selected data, printing the selected
20 reports to the printer emulator, storing the printed reports on a storage device.
Customer data may comprise, for example, customer names, locations, and service

request dates.

[0012] The selected data may comprise, for example, report numbers and service request dates. In embodiments where the selected data includes service request dates, the reports may be selected based on the service request dates (e.g., a report is
5 selected if the service request date is the current date).

[0013] In a further embodiment, the printed reports are saved as word processing documents, such as Microsoft Word documents. Each generated report may have a unique report number associated with it. In an embodiment where the generated reports each have unique report numbers, the file name for each saved report
10 comprises the report number. In a further embodiment, the saved reports are saved on a file server and may be accessed from remote locations.

[0014] The customer data may be deleted from the mainframe database system in a further embodiment. The customer data may be deleted after reports based on the customer data are generated. In other embodiments, each generated report is also
15 deleted from the mainframe database system. A generated report may be deleted after the generated report is selected and printed to the printer emulator.

[0015] The present invention also relates to systems for managing customer service request reports. In one embodiment, a system of the present invention comprises a mainframe database system, a computer and in communication with the
20 mainframe database system, and at least one terminal in communication with the

computer. The mainframe database system receives customer data, including service request dates, based on a plurality of customer requests. The mainframe database system generates a report based on each of the plurality of customer requests

[0016] The computer may further comprise a printer emulator and a spreadsheet.

5 Summaries of the reports generated by the mainframe database system are printed to the printer emulator. Selected data from the report summaries are imported into the spreadsheet, and the spreadsheet is delivered to the at least one terminal. Operators at the terminals may view and edit the spreadsheet.

[0017] In another embodiment, a system of the present invention comprises a
10 mainframe database system, a computer in communication with the mainframe database system comprising a printer emulator and a terminal emulator, and a file server in communication with the computer.

[0018] The mainframe database system receives customer data, including service request dates, based on a plurality of customer requests. The mainframe database
15 system generates a report based on each of the plurality of customer requests, and summaries of the reports are printed to the printer emulator. The terminal emulator connects to the mainframe database system and selects reports based on the summaries of the reports. The selected reports are printed to the printer emulator, and the printed reports are stored on the file server. In a further embodiment, the printed
20 reports may be stored on the file server as word processing documents.

[0019] In an embodiment directed to managing customer usage reports, a method of the present invention comprises receiving customer data in a mainframe database system based on a plurality of customer usage submissions. A report is generated for each of the plurality of customer usage submissions based on the customer data in the mainframe database system. A unique report number is assigned for each of the generated reports. At least one of the generated reports is selected for printing. A file comprising report numbers for the selected reports is generated. The file is printed to a printer emulator, and selected data from the printed file are imported into a spreadsheet. A terminal emulator connects to the mainframe database system. The selected reports are printed to the printer emulator, and the printed reports are saved.

[0020] A feature and advantage of the present invention is to provide a method and system for managing telecommunications reports that result in significant time savings to a company.

[0021] Another feature and advantage of the present invention is to provide a method and system for storing telecommunications reports that are easily searchable and accessible by technicians.

[0022] A further feature and advantage of the present invention is to provide a method and system for managing telecommunications reports that enable technicians to search for reports using their computers.

[0023] A still further feature and advantage of the present invention is to provide

an automatic method and system for managing telecommunications reports.

[0024] Another feature and advantage of the present invention is to reduce the amount of time and personnel required to manage telecommunications reports.

[0025] A further feature and advantage of the present invention is to reduce the
5 amount of paper and printer ribbons used in managing telecommunications reports.

[0026] Additional uses, objects, advantages, and novel features of the invention are set forth in the detailed description that follows and will become more apparent to those skilled in the art upon examination of the following or by practice of the invention.

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BRIEF DESCRIPTION OF THE FIGURES

[0027] FIG. 1 is a flowchart illustrating an exemplary method of managing telecommunications reports in an embodiment of the present invention.

FIG. 2 is an example of a report summary in one embodiment of the present
15 invention.

FIG. 3 is an example of a spreadsheet that may be created according to one embodiment of the present invention.

FIG. 4 is a schematic illustrating an embodiment of a system of the present invention for managing telecommunications reports.

20 FIG. 5 is a schematic illustrating another embodiment of a system of the present invention for managing access service requests.

FIG. 6 is a schematic illustrating an embodiment of a system of the present invention and the transfer of data and files between components.

FIG. 7 is a schematic illustrating another embodiment of a system of the present invention for managing detailed trunk records.

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DETAILED DESCRIPTION

[0028] The present invention relates to methods and systems for managing telecommunications reports. As used herein, "telecommunications reports" include, but are not limited to, access service requests, detailed trunk records, and other reports based on customer information (e.g., customer requests or customer submissions).

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[0029] The present invention is particularly useful in systems where customer data relating to a customer service request is entered into a mainframe database system by a customer service representative or other operator, and technicians need to regularly view, print, and store reports generated based on the customer data.

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[0030] Referring now to the figures, FIG. 1 is a flowchart illustrating an exemplary method of managing telecommunications reports in an embodiment of the present invention. Customer data is received in a mainframe database system. For example, a customer may call a customer service representative and request service, may email the telecommunications company and request service, or may send a facsimile to the telecommunications company to request service. The operator enters certain customer data into the mainframe database system. Examples of customer data include customer name, location, service request date, number of connections

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needed, service request date, customer service termination date, customer identification code, etc.

[0031] The mainframe database system generates 10 a report for each customer request based on the customer data in the mainframe database system. The

5 mainframe database system may include an application that generates a report for each customer request after the customer data is entered. The report may include the customer data and other customer information (e.g., information about prior service requests by the customer) and may organize the customer data in a manner that is useful to technicians. A unique report number 15 is assigned to each of the generated reports.

[0032] While a number of reports may be generated regularly, technicians may only need to view certain reports on a particular day. For example, technicians may only want to view a report on the day that the customer has requested the service. However, the technicians may need to be aware of the customer service requests
15 when the reports are generated.

[0033] Summaries of the generated reports 20 are printed periodically to a printer emulator. The report summaries contain enough information to determine whether a complete report needs to be viewed in order to provision service for the customer. The report summaries are printed on a regular basis, such as early in the morning
20 (before a normal work day begins). In one embodiment, a report summary is the cover page for each report. FIG. 2 is an example of a report summary in one

embodiment of the present invention, including a customer name, a report number, and a Carrier Information Code (CIC).

[0034] The printer emulator may comprise a computer, such as a PC, that is connected to the mainframe database system as a network printer. The computer
5 listens to a particular Winsock port for incoming data and emulates a printer. The mainframe database system does not know that the data are not going to a printer. The printer emulator receives the data into an ASCII text file.

[0035] An applet, such as a Visual Basic program, then opens the text file, parses the text file, and imports 25 selected data from the text file into a spreadsheet.
10 Selected data may include, for example, customer request date, Access Customer Name (ACNA), Carrier Information Code (CIC), Feature Groups "B" or "D" (B/D), service request date, report number, Circuit ID (CKT ID), Add/Delete/Change Action, and Supplemental Change (SUP) (e.g., "Due Date Change"). The report summaries each have the same format, such that the applet locates the selected data in the text
15 file and populates the cells of the spreadsheet with the selected data. The selected data for each report summary preferably occupies a single row in the spreadsheet.

[0036] The spreadsheet may be, for example, a Microsoft Excel spreadsheet. The spreadsheet is saved on the computer that acts as a terminal emulator. The computer may be connected to a local area network and may be accessed from other terminals
20 or work stations. The spreadsheet may also be automatically delivered to other computers on the network or over the Internet. FIG. 3 is an example of a spreadsheet

that may be created according to one embodiment of the present invention.

[0037] A report collector program may then open the spreadsheet and request certain reports based on the information in the spreadsheet. The report collector program, may be, for example, a Visual Basic 6 program and is preferably located on the same computer where the spreadsheet is stored. The spreadsheet may include a "print report" column, which indicates whether the operator wants the Visual Basic program to print the service request on that row. When the report collector program opens the spreadsheet, the "print report" column may be updated. If the "print report" column includes a positive indicator (e.g., a "Y" or "Yes") and the "Date" column is equal to today's date, then the report collector program selects the report for "printing." A number of reports may be selected for printing. There are also provisions for printing previous dates.

[0038] The report collector program then initiates a terminal emulator application. An example of a terminal emulator application useful in the present invention is Attachmate Extra. The terminal emulator connects to the mainframe database system. The terminal emulator allows the computer to act as a terminal that the mainframe database system recognizes.

[0039] After connecting to the mainframe database system, the terminal emulator submits a print request for the selected reports. The selected reports are then printed to the printer emulator. The printer emulator is preferably the same printer emulator that received the report summaries. As noted above, the computer having

the printer emulator is connected to the mainframe database system as a network printer. The computer having the printer emulator receives the printed report into an ASCII text file.

[0040] As the printed reports are received, another Visual Basic program parses

5 the information and saves 45 the printed reports on a file server. The reports are preferably saved as word processing documents that are compatible with conventional word processing applications, such as Microsoft Word. The file name for the saved reports may be the report number. The saved reports are preferably stored 50 on a storage device, such as a file server. The file server is preferably connected to a local area network, such that a person may access the stored reports from a terminal or
10 work station. In other embodiments, the file server is connected to the Internet, such that the reports may be accessed from a remote location. In a further embodiment, the saved or stored reports may be updated or modified by a person or computer accessing the file server.

15 [0041] FIG. 4 is a schematic illustrating an embodiment of a system of the present invention for managing telecommunications reports. The system illustrated in FIG. 4 includes a mainframe database system 75, a computer 80 comprising a printer emulator and a terminal emulator, and a file server 85.

[0042] The mainframe database system receives customer data (e.g., service
20 request dates, customer names, customer service requests, etc.) based on customer requests. The computer 80 comprising a printer emulator and a terminal emulator is

in communication with the mainframe database system 75. The mainframe database system 75 generates a report based on each of the customer requests. Summaries of the reports (e.g., report cover sheets) are printed to the printer emulator on the computer 80.

5 [0043] The computer 80 may further include a spreadsheet application, such as Microsoft Excel. When the report summaries are printed to the printer emulator on the computer 80, selected data from the printed report summaries are imported into the spreadsheet on the computer 80. The selected data includes, for example, service request dates, customer request dates, customer names, and report numbers. The
10 spreadsheet is then saved on the computer 80. The spreadsheet may also be stored on the file server 85 and/or sent to other computers. The other computers may be connected to a local area network 90 or may be remote computers connected to the Internet.

[0044] After the selected data are imported into the spreadsheet on the computer
15 80, a report collector program, such as a Visual Basic for Applications program, opens the spreadsheet and requests certain reports based on the information in the spreadsheet. The reports may be selected, for example, based on the service request dates.

[0045] The report collector program then initiates a terminal emulator application
20 on the computer 80. The terminal emulator on the computer 80 connects to the mainframe database system 75. The terminal emulator allows the computer 80 to act

as a terminal that the mainframe database system 75 recognizes. After connecting to the mainframe database system 75, the terminal emulator submits a print request for the selected reports. The selected reports are then printed to the printer emulator on the computer 80.

5 [0046] As the printed reports are received, another Visual Basic program on the computer 80 parses the information and saves the printed reports on a file server 85. The reports are preferably saved as word processing documents that are compatible with conventional word processing applications, such as Microsoft Word. As shown in FIG. 4, the file server is connected to a local area network 90, such that a person
10 may access the stored reports from a terminal or work station. In other embodiments, the file server is connected to the Internet, such that the reports may be accessed from a remote location. In a further embodiment, the saved or stored reports may be updated or modified by a person or computer accessing the file server.

[0047] Mainframe database systems suitable for use in the present invention
15 may include, for example, Exact/WFA/DI IBM Main Frame Databases.

[0048] As noted above, a computer is in communication with the mainframe database system. For example, the computer may be connected to the mainframe database system as a network printer. Examples of computers suitable for use in the present invention may include, for example, IBM computers with Pentium III
20 processors, having one hundred twenty-eight megabytes (128 MB) of RAM, a ten gigabyte (10 GB) hard drive and running Windows NT or Windows 2000.

[0049] Examples of printer emulator applications suitable for use in the present invention include commercially available Line Printer Remote ("LPR") programs. An example of a terminal emulator application useful in the present invention is Attachmate Extra.

5 [0050] Examples of file servers useful in the present invention include servers manufactured by IBM, Compaq, Hewlett-Packard, or other server manufactures, and running server applications such as Windows NT Server, Novell Netware, and Unix.

10 [0051] FIG. 5 is a schematic illustrating another embodiment of a system of the present invention for managing access service requests (ASRs). FIG. 6 is a schematic illustrating the transfer of data and files between components in an embodiment of a system for managing ASRs. Access service requests are customer service request reports that are generated when customers (both inter-exchange carriers and end users) request access to the telecommunications company's switches and trunks. An access service request is generated for each separate request from each customer. A
15 customer contacts the telecommunications company (e.g., by telephone, email, facsimile, etc.) and requests access.

[0052] When a customer contacts the telecommunications company, a customer service representative of the telecommunications company enters the relevant information into an ASR mainframe database system 100. The ASR mainframe
20 database system 100 generates an ASR for the request. A unique ASR number is assigned to each ASR.

[0053] A computer 105 is connected to the ASR mainframe database system 100 as a network printer. Summaries of the ASRs are printed periodically to the computer 105 using a printer emulator application. In one embodiment, the ASR summaries are cover sheets for each of the ASRs. The ASR summaries contain enough information to determine whether a complete report needs to be viewed in order to provision service for the customer. The ASR summaries may be printed on a daily basis, such as early in the morning (before a normal work day begins). The printer emulator application on the computer 105 receives the data into an ASCII text file.

[0054] The computer 105 also includes a spreadsheet application. When text files are received from the ASR mainframe database system 100, an applet, such as a Visual Basic program, then opens the text file, parses the text file, and imports selected data from the text file into a spreadsheet. Selected data from ASRs may include, for example, customer request date, Access Customer Name (ACNA), Circuit Information Code (CIC), Feature Group selection (B/D), service request date, report number, Circuit ID (CKT ID), Change/Add/Delete Action, and Supplemental Change (SUP) (e.g., "Due Date Change Only"). The ASR summaries each have the same format, such that the applet locates the selected data in the text file and populates the cells of the spreadsheet with the selected data. The selected data for each ASR summary preferably occupy a single row in the spreadsheet.

[0055] The spreadsheet is saved on the computer 105. The computer 105 may be connected to a local area network 110 and/or the Internet, and may be accessed from

other terminals or work stations. The spreadsheet may also be automatically delivered to other computers on the network 110 or over the Internet.

[0056] Another program on the computer 105, an ASR collector program, may then open the spreadsheet and request certain ASRs based on the information in the spreadsheet. The ASR collector program, may be, for example, a Visual Basic 6 program. The spreadsheet may include a "Print?" column, which indicates whether the service request should be printed. If the "Print?" column includes a positive indicator (e.g., a "Y" or "Yes") and the date column matches today's date, then the ASR collector program selects the ASR for "printing." A number of ASRs may be selected for printing. In some embodiments, a technician is able to access the spreadsheet and manually select or deselect an ASR for printing.

[0057] The computer 105 also includes a terminal emulator application, such as Attachmate Extra. After opening the spreadsheet and selecting ASRs for printing, the ASR collector program then initiates the terminal emulator application. The terminal emulator connects the computer 105 to the ASR mainframe database system 100.

[0058] After connecting to the ASR mainframe database system 100, the terminal emulator submits a print request for each of the selected ASRs. The selected ASRs are then printed to the printer emulator on the computer 105 as ASCII text files.

[0059] As the printed ASRs are received, another Visual Basic program, the ASR Handler, parses the information and saves the printed ASRs. The ASRs are

preferably saved as word processing documents that are compatible with conventional word processing applications, such as Microsoft Word. The file names for the saved ASRs includes the ASR number to facilitate subsequent searches by technicians.

[0060] The saved ASRs are stored on a storage device, such as a file server 115.

5 The file server 115 is connected to a local area network 110 and/or the Internet, such that a person may access the stored ASRs from a terminal or work station. ASRs can be accessed, for example, using the "Find" function ("Find"→"Files or Folders" from "Start") in Microsoft Windows operating systems. If ASRs are stored in a shared directory, they can be accessed from any technician's computer either via the local
10 area network 110 or from a remote location via the Internet. The saved or stored ASRs may be viewed, printed, updated, and/or modified by a person or computer accessing the file server 115.

[0061] At some point, usually after being saved on the file server 115, the ASRs are removed from the ASR mainframe database system 100.

15 [0062] FIG. 7 is a schematic illustrating an embodiment of a system of the present invention for managing detailed trunk records. Detailed Trunk Records (DTRs) are internal provisioning documents. The DTRs comprise data relating to options associated with provisioning a trunk. Examples include central office equipment and software values. A DTR may be generated by a Circuit Provisioning Group (CPG).

20 [0063] When a customer provides information to the telecommunications

company relating to its usage of a trunk, a customer service representative of the telecommunications company enters the relevant information into a mainframe database system 150. The mainframe database system 150 generates a DTR based on the information. A unique number, such as a Circuit Layout Order (CLO), is assigned to each DTR.

[0064] A computer 155 is connected to the mainframe database system 150 as a network printer. An application on the mainframe database system 150 generates an "Open Query System Report" (OQS report) that identifies all of the DTRs that need to be printed at a particular time (e.g., for a particular day). The OQS Report may list, for example, all of the DTRs that enter the system on a particular day. In one embodiment, each DTR on the list needs to be printed. The OQS Report is printed periodically to the computer 155 using a printer emulator application. The OQS report may be printed on a daily basis, such as early in the morning (before a normal work day begins). The printer emulator application on the computer 155 receives the data into an ASCII text file.

[0065] The computer 155 also includes a spreadsheet application. When a text file is received from the mainframe database system 150, an applet, such as a Visual Basic program, then opens the text file, parses the text file, and imports selected data from the text file into a spreadsheet. Selected data from OQS Report may include, for example, the CLO number. The applet locates the selected data in the text file and populates the cells of the spreadsheet with the selected data. The selected data

preferably occupy a single row in the spreadsheet.

[0066] The spreadsheet is saved on the computer 155. The computer 155 may be connected to a local area network 160 and/or the Internet, and may be accessed from other terminals or work stations. The spreadsheet may also be automatically
5 delivered to other computers on the network 160 or over the Internet.

[0067] Another program on the computer 160, a DTR requestor program, then opens the spreadsheet and requests certain DTRs based on the information in the spreadsheet. The DTR requestor program, may be, for example, a Visual Basic 6 program. In one embodiment, the spreadsheet contains only the CLO numbers for
10 DTRs that should be printed. In some embodiments, a technician is able to access the spreadsheet and manually add or remove a particular CLO number associated with a DTR to control the printing of that DTR.

[0068] The computer 155 also includes a terminal emulator application, such as Attachmate Extra. After opening the spreadsheet, the DTR requestor program then
15 initiates the terminal emulator application. The terminal emulator connects the computer 155 to the mainframe database system 150.

[0069] After connecting to the mainframe database system 150, the terminal emulator submits a print request for each DTR associated with a CLO in the spreadsheet. The selected DTRs are then printed to the printer emulator on the
20 computer 155 as ASCII text files.

[0070] As the printed DTRs are received, another Visual Basic program, the DTR Handler, parses the information and saves the printed DTRs. The DTRs are preferably saved as word processing documents that are compatible with conventional word processing applications, such as Microsoft Word. The file names for the saved
5 DTRs includes the CLO number to facilitate subsequent searches by technicians.

[0071] The saved DTRs are stored on a storage device, such as a file server 165. The file server 165 is connected to a local area network 160 and/or the Internet, such that a person may access the stored DTRs from a terminal or work station. DTRs can be accessed, for example, using the "Find" function ("Find"→"Files or Folders" from
10 "Start") in Microsoft Windows operating systems. If DTRs are stored in a shared directory, they can be accessed from any technician's computer either via the local area network 160 or from a remote location via the Internet. The saved or stored DTRs may be viewed, printed, updated, and/or modified by a person or computer accessing the file server 165.

15 [0072] At some point, usually after being saved on the file server 165, the DTRs are removed from the DTR mainframe database system 150.

[0073] In further embodiments, a computer program can open a filed DTR, automatically log into a mechanized translation system and provision the service. For example, most of the data needed to provision a trunk exists in the filed DTR. The
20 remainder of the information needed to provision the trunk may be specific to a central office. In one embodiment, a Microsoft Access database could store the data

5 mechanized translation system database, and provision the trunk.

0 skilled in the art without departing from the spirit and scope of the present invention.

1875 1876 1877 1878 1879 1880 1881 1882 1883 1884 1885 1886 1887 1888 1889 1890 1891 1892 1893 1894 1895 1896 1897 1898 1899 1900 1901 1902 1903 1904 1905 1906 1907 1908 1909 1910 1911 1912 1913 1914 1915 1916 1917 1918 1919 1920 1921 1922 1923 1924 1925 1926 1927 1928 1929 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939 1940 1941 1942 1943 1944 1945 1946 1947 1948 1949 1950 1951 1952 1953 1954 1955 1956 1957 1958 1959 1960 1961 1962 1963 1964 1965 1966 1967 1968 1969 1970 1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039 2040 2041 2042 2043 2044 2045 2046 2047 2048 2049 2050 2051 2052 2053 2054 2055 2056 2057 2058 2059 2060 2061 2062 2063 2064 2065 2066 2067 2068 2069 2070 2071 2072 2073 2074 2075 2076 2077 2078 2079 2080 2081 2082 2083 2084 2085 2086 2087 2088 2089 2090 2091 2092 2093 2094 2095 2096 2097 2098 2099 2100 2101 2102 2103 2104 2105 2106 2107 2108 2109 2110 2111 2112 2113 2114 2115 2116 2117 2118 2119 2120 2121 2122 2123 2124 2125 2126 2127 2128 2129 2130 2131 2132 2133 2134 2135 2136 2137 2138 2139 2140 2141 2142 2143 2144 2145 2146 2147 2148 2149 2150 2151 2152 2153 2154 2155 2156 2157 2158 2159 2160 2161 2162 2163 2164 2165 2166 2167 2168 2169 2170 2171 2172 2173 2174 2175 2176 2177 2178 2179 2180 2181 2182 2183 2184 2185 2186 2187 2188 2189 2190 2191 2192 2193 2194 2195 2196 2197 2198 2199 2200 2201 2202 2203 2204 2205 2206 2207 2208 2209 2210 2211 2212 2213 2214 2215 2216 2217 2218 2219 2220 2221 2222 2223 2224 2225 2226 2227 2228 2229 2230 2231 2232 2233 2234 2235 2236 2237 2238 2239 2240 2241 2242 2243 2244 2245 2246 2247 2248 2249 2250 2251 2252 2253 2254 2255 2256 2257 2258 2259 2260 2261 2262 2263 2264 2265 2266 2267 2268 2269 2270 2271 2272 2273 2274 2275 2276 2277 2278 2279 2280 2281 2282 2283 2284 2285 2286 2287 2288 2289 2290 2291 2292 2293 2294 2295 2296 2297 2298 2299 2300 2301 2302 2303 2304 2305 2306 2307 2308 2309 2310 2311 2312 2313 2314 2315 2316 2317 2318 2319 2320 2321 2322 2323 2324 2325 2326 2327 2328 2329 2330 2331 2332 2333 2334 2335 2336 2337 2338 2339 2340 2341 2342 2343 2344 2345 2346 2347 2348 2349 2350 2351 2352 2353 2354 2355 2356 2357 2358 2359 2360 2361 2362 2363 2364 2365 2366 2367 2368 2369 2370 2371 2372 2373 2374 2375 2376 2377 2378 2379 2380 2381 2382 2383 2384 2385 2386 2387 2388 2389 2390 2391 2392 2393 2394 2395 2396 2397 2398 2399 2400 2401 2402 2403 2404 2405 2406 2407 2408 2409 2410 2411 2412 2413 2414 2415 2416 2417 2418 2419 2420 2421 2422 2423 2424 2425 2426 2427 2428 2429 2430 2431 2432 2433 2434 2435 2436 2437 2438 2439 2440 2441 2442 2443 2444 2445 2446 2447 2448 2449 2450 2451 2452 2453 2454 2455 2456 2457 2458 2459 2460 2461 2462 2463 2464 2465 2466 2467 2468 2469 2470 2471 2472 2473 2474 2475 2476 2477 2478 2479 2480 2481 2482 2483 2484 2485 2486 2487 2488 2489 2490 2491 2492 2493 2494 2495 2496 2497 2498 2499 2500 2501 2502 2503 2504 2505 2506 2507 2508 2509 2510 2511 2512 2513 2514 2515 2516 2517 2518 2519 2520 2521 2522 2523 2524 2525 2526 2527 2528 2529 2530 2531 2532 2533 2534 2535 2536 2537 2538 2539 2540 2541 2542 2543 2544 2545 2546 2547 2548 2549 2550 2551 2552 2553 2554 2555 2556 2557 2558 2559 2560 2561 2562 2563 2564 2565 2566 2567 2568 2569 2570 2571 2572 2573 2574 2575 2576 2577 2578 2579 2580 2581 2582 2583 2584 2585 2586 2587 2588 2589 2590 2591 2592 2593 2594 2595 2596 2597 2598 2599 2600 2601 2602 2603 2604 2605 2606 2607 2608 2609 2610 2611 2612 2613 2614 2615 2616 2617 2618 2619 2620 2621 2622 2623 2624 2625 2626 2627 2628 2629 2630 2631 2632 2633 2634 2635 2636 2637 2638 2639 2640 2641 2642 2643 2644 2645 2646 2647 2648 2649 2650 2651 2652 2653 2654 2655 2656 2657 2658 2659 2660 2661 2662 2663 2664 2665 2666 2667 2668 2669 2670 2671 2672 2673 2674 2675 2676 2677 2678 2679 2680 2681 2682 2683 2684 2685 2686 2687 2688 2689 2690 2691 2692 2